MICROWAVE SPECTRA OF 1- AND 2-BROMOBUTANE

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The rotational spectrum of 1-bromobutane measured by the 480 MHz bandwidth chirped-pulse Fourier transform microwave (CP-FTMW) spectroscopy. In this paper, the $ab\ initio$ calculation and the analysis of rotational spectrum were performed, and the properties of gas molecule are reported.

1-bromobutane have five confomers; aa, ag, ga, gg, gg'. The transitions were assigned to three different conformers which are most stable forms; aa, ag, ga. The spectra for the normal isotopic species and ^{81}Br substitution were observed and assigned.

The rotational spectrum of 2-bromobutane has been observed in the frequency region 7-18 GHz. 2-bromobutane has the three possible conformers; G+, A, G-. The difference of their energy is very small, so the spectra of all conformers were found in the full range of our spectrum.

Consequentially, the rotational constants, nuclear quadrupole constants, and centrifugal distortion constants were determined and the dipole moment of the aa conformer with ^{79}Br were measured. All the experimental data is in good agreement with the calculated data.

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